

**REMARKS/ARGUMENTS**

Reconsideration and allowance of the subject patent application is respectfully requested. Claims 4-13 are currently pending.

Claims 4-13 were rejected under 35 U.S.C. Section 112, second paragraph, as allegedly being indefinite. Applicants respectfully submit that the terms "free-floating core", "print-out region" and "integral datum regions" are familiar to one of ordinary skill in the art and are readily understandable in the claimed context and do not render the claims indefinite. *See also* respective discussions of these terms with respect to the background of the invention and example embodiments in Applicants' specification, at page 2, lines 3-19 and page 2, lines 26 through page 3, line 3 (re "free-floating core"); page 7, lines 3-5, 26 et seq. (re "print-out region") and page 8, lines 23 et seq.; and page 6, lines 27 through page 7, line 3 (re "integral datum regions").

The rejection of claims 4-13 under 35 U.S.C. § 103(a) as being unpatentable over Sikkenga et al. (U.S. Patent 6,347,660) in view of Mertins (U.S. Patent 6,505,678) is respectfully traversed.

Sikkenga et al. ('660) discloses a multi-piece core assembly wherein different core pieces are assembled together using interlocking "locator" portions of adjacent core pieces. Sikkenga et al. *do not teach or suggest the use of any type of reference datum system nor does the core assembly provided by Sikkenga et al. result in the production of a datum structure or datum pads on a cast article as set forth by Applicants' claims.*

Mertins ('678) is directed toward a method and apparatus for forming a plurality of wax "locator" elements onto the surface of a ceramic core by providing a special die apparatus that

holds the core while the wax elements are formed on the cores' surface. The disclosed die apparatus has hollow pins (36) that each include a "locator-forming cavity" (36a) on an end surface that contacts the core piece (10). Raised "locator" elements (100) are formed onto the surface of the core (10) when melted wax is introduced/injected into the die cavity via passage ways (144) to the locator-forming cavity at the ends of the pins (36). (See '678 patent at column 5, lines 7-18 and lines 37-41 and Figures 3-4). The core piece with the molded-on "locator" elements (100) formed thereon is then removed from the special die apparatus (20) and placed in a conventional fugitive pattern forming die 200a/200b (Figure 6). "Hot melted wax is then injected under pressure into the cavity 200 about the core 10 and solidified to form a wax turbine blade pattern about the core 10 in conventional manner." (See '678 patent at column 5, lines 37-41).

Essentially, Mertins' "locator" elements 100 are formed on core piece 10 solely to secure for the purpose of securing the position of core piece 10 within the cavity of the pattern forming die 200. In other words, the locator elements 100 do not function as a datum reference scheme but merely serve to physically affix the core piece within the pattern die cavity so that it will not move or shift during the process of molding the fugitive pattern. Moreover, Mertins' molded-on locator elements 100 are made of the same material as the fugitive pattern material (i.e. wax) and effectively become part of the fugitive pattern that is formed around the core and, consequently, could not result in producing datum pads or a datum structure on the core print-out portion of the cast article, as required by applicants' claims 4-13.

In contrast to Mertins ('678) , Applicants' claims 4-13 are not directed toward a method or apparatus for securing a free floating core piece at a fixed location within a fugitive pattern die cavity, but rather are generally directed toward the provision of a core-based datum reference

scheme that effectively follows any change in position of the core print-out interior portions of an investment cast article with respect to its exterior cast features so that the relative geometry of its interior core-produced features can be accurately referenced. In particular, Applicants' claimed apparatus does not use "locators" on the ceramic core. Applicants' claimed method casts datums on a portion of the core print-out (i.e., the cast features produced by the core) so that a precision reference system is produced, for example, for use by auto-machining equipment. Applicants' claimed datum pads on the core piece are not used to position or hold the core piece within the cavity, but rather are used to produce a system of datum pads cast relative to internal cavity features of the cast article and which form a secondary datum system that is independent of any external cast datum pads and, for example, may therefore be used for precision machining of internal cavity features.

The method and apparatus of Mertins ('678) does not provide nor teach or suggest a core-based reference datum system consisting of one or more datum pads produced on the core print-out portion of the cast article, as set forth by Applicants' claims 4-13. Moreover, Neither Sikkenga et al. ('660) nor Mertins ('678), considered either alone or together, teach or suggest the method or the use of a core-based datum system that is produced on the core print-out or core flashing region of an investment-cast article such that the datum structure that results can serve as a reference system for ascertaining the relative location of internal core-generated geometric features of the cast article, as currently set forth in applicants' claims 4-13. For at least the reasons set forth above, the two applied references, even when combined, do not teach or suggest a core-based datum scheme that is formed on a core-generated print-out portion of a cast article, as set forth by Applicants' claims.

In view of the foregoing amendments and remarks, it is respectfully submitted that Applicants' claims 4-13 are patentable over the prior art of record and that the application is in condition for allowance. Favorable consideration and prompt allowance of the application are solicited. Should the Examiner believe that anything further is necessary to place the application in condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

In view of Applicant's foregoing remarks, it is believed that the application is in condition for allowance. Favorable consideration and allowance of this application are respectfully solicited. If any small matter remains outstanding, the Examiner is encouraged to telephone Applicants' representative at the telephone number listed below or on the following page.

Respectfully submitted,

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